

Mr. Kevin Bilash  
USEPA Region III  
Land, Chemicals & Redevelopment Division 3LD20  
1650 Arch Street  
Philadelphia, PA 19103

April 29, 2022  
File No. 4862.04

Re: Marcus Hook Industrial Complex  
Monthly Progress Report – April 2022  
Area of Interest 7  
Marcus Hook, PA

Dear Mr. Bilash:

This monthly progress report is being submitted on behalf of the Evergreen Resource Management Operations (Evergreen) for AOI 7 at the Marcus Hook Industrial Complex (MHIC) in Marcus Hook, Pennsylvania. On December 9, 2021, a Revised Interim Measures (IM) Workplan was submitted to the USEPA to address arsenic in the subsurface at AOI 7. The USEPA approved the Revised IM Workplan on February 15, 2022. This monthly progress report is being submitted in accordance with the USEPA's request in the October 26, 2021 correspondence concerning the IM Workplan.

**Activities completed this reporting period**

The field activities that were completed during this reporting period (April 2022) include field mobilization, soil boring and monitoring well installation, and pressure transducer deployment. The field activities occurred April 4, 2022 through April 8, 2022. Details for these activities are presented below:

**Soil Borings and Monitoring Well Installation**

- Utility clearance to 6 feet below ground surface (ft bgs) at three locations
- Soil boring advancement at locations AOI7-BH-22-001, MW-608D and MW-609D
  - AOI7-BH-22-001 was advanced to 30 ft bgs
  - MW-608D and MW-609D were advanced down to 40 ft bgs due to the ground elevation to ensure the completion depth was consistent with other monitoring wells.
- Soil samples were collected for:
  - Arsenic and iron analysis (twenty-two samples plus one field duplicate, MS and MSD sample)
  - BOD/COD/TOC analysis (nine samples)
  - Grain size analysis (six samples)
  - Atterberg limits analysis (two samples)
  - Bench scale analysis (four samples)
- Monitoring well installation and well development at MW-608D and MW-609D
- Pressure transducer deployment at:
  - Five shallow monitoring well locations (MW-509, MW-559, MW-560, MW-531U, MW-606S)
  - Five deep monitoring well locations (MW-509D, MW-606D, MW-532L, MW-609D, MW-293D)
  - The stilling well

In addition to the field activities, a conference call was held with representatives from Evergreen, USEPA and Sanborn Head to discuss the preliminary results of the sediment and porewater sampling on April 18, 2022. Based upon discussions during this meeting, Evergreen will include a description of the field methods for the sediment and porewater sampling as well as the sediment and porewater results in the May 2022 progress report.

### **Activities planned for the next reporting period**

The activities planned for the next reporting period (May 2022) include the following activities, as described in the Revised IM Workplan:

- Field mobilization
- Drilling and monitoring well installation (for the remaining two monitoring wells, MW-559D and MW-560D, that could not be completed in April 2022 due to access issues)
- Soil sampling from MW-559D and MW-560D
  - 12 samples for arsenic and iron analysis
  - Six samples for COD/BOD/TOC analysis
  - Three samples for grain size analysis
  - One sample collected for bench scale treatability studies
- Surveying of the one soil boring, four monitoring wells, and one stilling well
- Groundwater sampling event
  - Groundwater gauging event for all AOI 7 monitoring wells
  - Nine samples for dissolved arsenic and dissolved iron analysis
  - Nine samples for sulfate and sulfide analysis
  - Nine samples collected for bench scale treatability studies
  - Colloidal borescope deployment in various wells

The proposed locations for the remaining two monitoring wells (MW-559D and MW-560D) are shown in Figure 33 of the Revised IM Workplan, which is attached to this progress report as Figure 1. The field activities listed above are planned for May 11, 2022 through May 13, 2022 for the monitoring well installation event and May 24, 2022 through May 27, 2022 for the groundwater sampling event and survey activities.

As discussed in the meeting on April 20, 2022 with the USEPA, Evergreen, and Sanborn Head, a detailed report of the sediment and porewater sampling methodology and results will be submitted as part of the May 2022 Monthly Progress Report.

### **Deviation from approved activities this reporting period**

The approved Revised IM Workplan included the monitoring well installation of four proposed locations. Two of the monitoring well locations, MW-559D and MW-560D, required access to the adjacent Honeywell property in order to safely install the monitoring wells due to an eroding shoreline along Middle Creek. The monitoring well installation of the remaining two wells is postponed to May 11, 2022 since access was not granted in time for the April 4, 2022 event. Evergreen anticipates signature soon from Honeywell on the access agreement so that the drilling can be completed in May. Due to this postponement, the groundwater sampling event has also been rescheduled to start on May 24, 2022.

### **Deviation from approved schedule**

The schedule of IM Workplan activities was revised based on the delay in PDI activities due to access issues and availability of subcontractors to complete the planned activities for the installation of the

remaining two monitoring wells as discussed above. The updated schedule for the major milestones is provided below and the updated detailed schedule is included in Attachment A.

Task	Schedule
PDI Activities	3/2022 - 5/2022
Bench Scale Treatability Testing	5/2022 - 8/2022
Pilot Testing	8/2022 - 11/2022
IM Performance Monitoring	10/2022 - 11/2023

Very truly yours,  
SANBORN, HEAD & ASSOCIATES, INC.



Colleen Costello, PG  
Senior Vice President

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#### **FIGURES**

Figure 33 – Proposed Pre-Design Investigation Locations for Surface Water and Groundwater Measurements and Soil and Groundwater Data Collection for Bench Scale Treatability Testing

#### **ATTACHMENTS**

Attachment A – Updated Interim Measures Implementation Schedule





















Evergreen  
 Marcus Hook, Pennsylvania

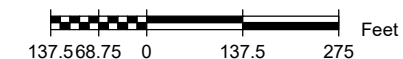
Drawn By: M. Fuerte / E. Wright  
Designed By: C. Costello  
Reviewed By: C. Costello  
Project No: 4862.00  
Date: December 2021

## Notes

1. AOI 7 well locations provided by Stanport data portal, August 2021.
2. Aerial imagery Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
3. SWMU 9 located based on SWMU 9 Data Summary Report, Wood, 2020.
4. The bulkhead, remedial systems, sheet pile wall and well locations were provided by Stantec in Figure I-3 "Phillips Island Remediation System Site Plan" from July 2019.

### Legend

-  Monitoring Well
-  Recovery Well
-  Remediation Well
-  Soil Boring
-  Staff Gauge
-  Proposed Monitoring Well
-  Proposed Soil Boring
-  Existing Location for PDI Sampling and Pressure Transducer
-  Existing Location for PDI Sampling
-  Current and historic arsenic in groundwater above 1,253 µg/L
-  Sunoco Pipeline
-  Bulkhead
-  Sheet Pile Wall
-  Remediation Systems
-  AOI-7 Boundary
-  SWMU 9 Boundary





Attachment A

Updated Interim Measures Implementation Schedule Evergreen

Marcus Hook, Pennsylvania

Task Name	Start	Finish	Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4		
			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Submit IM Workplan to EPA	12/09/21	12/09/21																											
EPA Approval of IM Workplan	12/10/21	02/15/22																											
Monthly Report to EPA	01/31/22	08/31/23																											
January 2022 Monthly Report	01/31/22	01/31/22																											
February 2022 Monthly Report	02/28/22	02/28/22																											
March 2022 Monthly Report	03/31/22	03/31/22																											
April 2022 Monthly Report	04/29/22	04/29/22																											
May 2022 Monthly Report	05/31/22	05/31/22																											
June 2022 Monthly Report	06/30/22	06/30/22																											
July 2022 Monthly Report	07/29/22	07/29/22																											
August 2022 Monthly Report	08/31/22	08/31/22																											
September 2022 Monthly Report	09/30/22	09/30/22																											
October 2022 Monthly Report	10/31/22	10/31/22																											
November 2022 Monthly Report	11/30/22	11/30/22																											
December 2022 Monthly Report	12/30/22	12/30/22																											
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July 2023 Monthly Report	07/31/23	07/31/23																											
August 2023 Monthly Report	08/31/23	08/31/23																											
PDI	03/07/22	06/30/22																											
PDI Mobilization	03/22/22	05/31/22																											
Sediment and Porewater Sampling	03/22/22	05/31/22																											
Field Mobilization	03/22/22	03/22/22																											
Collection of sediment samples and grab porewater samples	03/22/22	03/25/22																											
Collection of DGT porewater samples	03/22/22	03/23/22																											
Laboratory Data Analysis	03/28/22	04/29/22																											
Data Validation	04/26/22	05/10/22																											
Data Evaluation	04/18/22	05/31/22																											
GW Elevation and GW Flow Evaluation	03/25/22	06/30/22																											
Installation of Transducers	04/08/22	04/08/22																											
Deployment of Groundwater Flow Meter	05/24/22	05/24/22																											
Install stilling well	03/25/22	03/25/22																											
Data Collection	04/08/22	05/27/22																											
Data Evaluation	05/27/22	06/30/22																											
Monitoring Well Installations, Soil Borings and Soil Sampling	03/07/22	06/30/22																											
Obtain Access to Honeywell Property	03/07/22	05/09/22																											

Task Name	Start	Finish	Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4		
			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Delaware Well Permits	03/21/22	04/01/22																											
Utility Clearance	03/25/22	03/25/22																											
Soil Borings, Well Installations and Soil Sampling	04/04/22	05/13/22																											
Laboratory Data Analysis	04/11/22	05/27/22																											
Data Validation	05/27/22	06/10/22																											
Well Development	04/07/22	05/13/22																											
Well and Boring Survey	05/24/22	05/24/22																											
Data Evaluation	04/11/22	06/30/22																											
Groundwater Sampling	05/24/22	06/30/22																											
Groundwater Sampling	05/24/22	05/27/22																											
Laboratory Data Analysis	05/27/22	06/10/22																											
Data Validation	06/10/22	06/23/22																											
Data Evaluation	06/10/22	06/30/22																											
Bench Scale Treatability Test	05/31/22	09/02/22																											
Baseline Characterization	05/31/22	06/13/22																											
Titration and Soil Oxidant Demand Test	06/13/22	06/17/22																											
Titration	06/13/22	06/13/22																											
Soil Oxidant Demand Test	06/13/22	06/17/22																											
Reagent Screening	06/20/22	07/15/22																											
Test Setup	06/20/22	06/21/22																											
Initial Test	06/22/22	06/24/22																											
Modification Test (If Needed)	06/27/22	07/08/22																											
Evaluation	07/11/22	07/15/22																											
Rebound Test	07/18/22	08/19/22																											
Reactor Setup	07/18/22	07/18/22																											
First Sampling and Replenishing	07/25/22	07/25/22																											
Second Sampling and Replenishing	08/01/22	08/01/22																											
Final Sampling	08/08/22	08/08/22																											
Evaluation	08/08/22	08/19/22																											
Bench-scale Study Report	08/22/22	09/02/22																											
Pilot Test	09/05/22	10/11/23																											
Pilot Study Design	09/05/22	09/26/22																											
Pilot Study Implementation	09/27/22	11/21/22																											
Permit	09/27/22	10/17/22																											
Injection Preparation	10/18/22	10/31/22																											
Injection Activities	11/01/22	11/21/22																											
Pilot Study Monitoring	11/01/22	10/11/23																											
Baseline Sampling	11/01/22	11/03/22																											
First Performance Monitoring	01/09/23	01/11/23																											
Second Performance Monitoring	04/10/23	04/12/23																											
Third Performance Monitoring	07/10/23	07/12/23																											
Fourth Performance Monitoring	10/09/23	10/11/23																											
CMS	10/16/23	11/20/23																											
Design of Final Remedy	10/16/23	11/17/23																											
Submittal of CMS	11/20/23	11/20/23																											